



# Illinois Department of Transportation

## Memorandum

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To: DIRECTORS, DEPUTY DIRECTORS, AND BUREAU CHIEFS  
From: Dianna L. Taylor  
Bureau Chief of Personnel Management  
Subject: Technical Vacancy  
Date: October 14, 2015

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Attached are the Position Summary Sheet and Position Description for the vacant technical position listed below. Please post this vacancy announcement October 15, 2015 in the designated areas.

The deadline for applicants to submit their names for consideration is **4:30 p.m.** on **Wednesday, October 28, 2015**. Applicants will not be accepted after that time and date.

All applicants will receive a position description for the position they are applying for. If you have any questions, please contact Halie Zulauf or Denise Hamilton at 217/782-5594.

ET IV

Nuclear Density Supervisor  
Region 5/District 8/Project Implementation  
Highways  
Collinsville

Attachments  
40594

Technical Applications (PM 1080) **must be received** by the Bureau of Personnel Management, Room 113, 2300 South Dirksen Parkway, Springfield, IL 62764 (Fax# 217/557-3134) by **Wednesday, October 28, 2015**, 4:30 p.m. Please include address, daytime phone and position for which applying if not already listed on application. Applicants will be notified in writing to schedule interviews.



An Equal Opportunity Employer

## Position Summary Sheet

**Classification:** Engineering Technician IV

**Salary Range:** \$4,695 - \$8,775

**Position Title:** Nuclear Density Supervisor

**Union Position:** ☒ Yes ☐ No

**Position Number:** PW014-23-58-203-10-02

**IPR#:** 40594

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### Office/Central Bureau/District/Work Address:

Highways / Region 5 / District 8 / Bureau of Project Implementation / 1102 Eastport Plaza Drive / Collinsville, IL

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### Description Of Duties:

This position is accountable for ensuring effective embankment construction practices and subgrade controls. In addition, this position is accountable for ensuring the proper placement and compaction of bituminous concrete pavements, stabilized shoulder, bituminous concrete pavement patching and granular materials by the supervising the in-place density testing of materials on construction projects within District Eight.

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### Special Qualifications:

#### *The following criteria is required:*

- Valid driver's license

#### *The following criteria is desired:*

- An associate degree from an accredited two-year civil engineering technology program. Knowledge, skill and mental development equivalent to the completion of two years of college in pre-engineering or civil engineering technology.
- Eight years' experience in performing a variety of technical tasks of which at least four years should be related to civil engineering.
- Strong oral and written communication skills

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### Shift/Remarks:

Typically 8:00 am - 4:30 pm / Monday - Friday

**ILLINOIS DEPARTMENT OF TRANSPORTATION  
POSITION DESCRIPTION**

<b>DATE:</b>	June 2014	<b>POSITION:</b>	Nuclear Density Supervisor
<b>APPROVED BY:</b>	<u>Ross Breckenridge</u>	<b>OFFICE/DIVISION:</b>	Highways / D8 / Project Implementation / Materials
<b>CODE:</b>	PW014-23-58-203-10-02	<b>REPORTS TO:</b>	Geotechnical Engineer

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***Position Purpose***

This position is accountable for ensuring effective embankment construction practices and subgrade controls. In addition this position is accountable for assuring the proper placement and compaction of bituminous concrete pavements, stabilized shoulder, bituminous concrete pavement patching and granular materials by supervising the in-place density testing of these materials as they are placed on construction projects within District Eight.

***Dimensions***

Subordinate Personnel:	5 Nuclear Density Inspectors assigned to the Construction Sect.
Contract Value of roadway designs:	\$50,000 - \$20 Million

***Nature and Scope***

This position reports to the Geotechnical Engineer as do the Drilling Supervisor. Reporting to this position, on a project basis, is a staff of Nuclear Density Inspectors assigned to the Construction Section.

The incumbent in this position supervises project personnel who perform embankment density and moisture tests, aggregate density and moisture tests, and bituminous concrete density tests on construction projects to assure conformance with plans, specifications, policies and good engineering practices. The incumbent also acts as Radiation Safety Officer which involves ensuring that personnel who use the nuclear testing equipment are knowledgeable and comply with applicable regulations. The incumbent reviews and prepares written documentation for proposed borrow sites and coordinates nuclear density inspection with contractor's personnel for quality Control/Quality Assurance (QC/QA) projects. When required, the incumbent assists the Geotechnical Engineer in preparing soils profiles, stability analyses, and recommendations to other bureaus. The position is unique in that the use of soils as a construction material is not an exact science and it requires an incumbent who has a thorough knowledge of soils, soil mechanics, soil testing, construction procedures, specifications, policies, and an understanding of the practical engineering of good embankments and subgrades. The incumbent meets these responsibilities throughout the entire District Eight area, which necessitates a great deal of travel and coordination.

Some typical problems encountered by the incumbent include achieving required densities for earth and/or Bituminous Materials using available materials and equipment on project sites. Several other problems require ensuring that reports concerning density curves for soil and granular samples are submitted and processed with maximum efficiency throughout District Eight. The major challenge of this position is the training of Nuclear Density Inspectors to ensure that they are competent in performing proper density and stability level tests on construction projects in a timely manner.

Typical problems involve finding solutions for unstable soil conditions; recognizing or determining the construction characteristics of the soil types available for each project; monitoring progress during construction for changing soils and anticipation any problems; assisting project personnel in acquiring an understanding of good embankment construction procedures, recognition of soil types and determination of construction characteristics; coordinating with contractor's personnel and resolving conflicts on QC/QA projects; assisting Nuclear Technicians in obtaining compliance by local agencies on state financed projects; obtaining contractor

compliance with contract provisions; and ensuring that tests conducted by subordinates are in compliance with District testing policy. The greatest challenge confronting the incumbent is to ensure that all embankments and subgrades provide stable roadway foundations. The incumbent serves as the chairperson to the Bituminous Review Committee. This position also assists the Geotechnical Engineers with settlement monitoring, cone penetrometer data, and soils reports.

The incumbent personally assigns personnel to projects; ensures that adequate inspection is made on all projects on a periodic basis; reviews problems and makes recommendations as necessary; reviews all soils embankment and bituminous density reports prepared by subordinates for federal, state and city projects; reviews reports submitted by the Radiation Monitoring Service to assure that personnel comply with Department of Health radiation regulations; collects samples and prepares approval documentation for proposed borrow pits; takes independent assurance samples on all embankment, aggregate, and bituminous density tests; trains and supervises embankment inspectors. The incumbent makes recommendations to the Geotechnical Engineer, Mixtures Control Engineer and to the Project Resident Engineer/Technician concerning density and stability measures needed.

The incumbent has latitude to make decisions in the area of assigned responsibility but must obtain approval of his/her supervisor for important soils recommendations and keep him/her informed of anticipated problems and pertinent changes of assigned personnel. S/he recommends the purchase of necessary supplies and services. The position operates under Departmental rules, orders, policies and specifications.

Within the Department there are frequent contacts with the District Bureaus of Construction, Local Roads and Streets, and Operations to discuss soils related construction and maintenance problems. The Central Bureau of Materials is often contacted to discuss the maintenance and calibration of nuclear testing equipment. Outside contacts are with the Department of Health and the Nuclear Monitoring Service to discuss use of the nuclear testing equipment. Other contacts are with contractors, consulting firms, County Engineers, and Aeronautics personnel to discuss construction projects.

The effectiveness of this position is measured by the quality and timeliness of density and stability test data gathered on construction projects. The incumbent is evaluated based upon the ability to anticipate problems, the ability to make sound decisions which will be accepted as authoritative, and the ability to obtain a good level of performance by subordinates.

### ***Principal Accountabilities***

1. Performs duties in compliance with departmental safety rules.
2. Performs all duties in a manner conducive to the fair and equitable treatment of all employees.
3. Train and motivate Nuclear Density Inspectors who are assigned to construction projects in the District.
4. Oversee the contractors or consultants Nuclear Density Inspectors working on QC/QA projects.
5. Assist the Nuclear Density Inspectors on any problems encountered during the performance of their duties.
6. Review all reports submitted to the District office made by Nuclear Density Inspectors on State, City, and County projects.
7. Ensure the Geotechnical Engineer, Mixtures Control Engineer and the resident engineers/technicians are aware of significant problems relating to embankment and bituminous density control.

8. Assist the Geotechnical Engineer with settlement monitoring, cone penetrometer data, and soils reports.
9. Collect and supervise testing of soil samples to determine maximum density, and optimum moisture.
10. Ensure all safety guidelines are met especially with the radioactive testing gauges.